



Atty Dkt 91004.003  
2225-0001  
PATENT

#7

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10/23/00  
Date

Gail Wardwell  
Signature

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

AZPIROZ et al.

Serial No.: 09/502,426

Group Art Unit: Unassigned

Filing Date: February 11, 2000

Examiner: Unassigned

Title: *dwf4* POLYNUCLEOTIDES, POLYPEPTIDES AND USES THEREOF

**REQUEST FOR A CORRECTED FILING RECEIPT**

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

Please furnish the undersigned with a corrected filing receipt for the above-identified application. The corrections needed are as follows:

Under **Title** please replace:

"therof" with --thereof--

Attached is a copy of the Filing Receipt with the correction highlighted. Also included is a copy of the Application Transmittal Letter and page 1 of the Application showing the correct spelling.

It is believed that no fee is due. If for any reason a fee is found to be necessary, our Deposit Account No. 18-1648 may be charged therefor.

Respectfully submitted,

Date: Oct 23, 2000

By: D. Pasternak  
Dahna S. Pasternak  
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MAY 2 - 2000

ROBINS & ASSOCIATES  
FILING RECEIPT

\*OC000000005071441\*

UNITED STATES DEPARTMENT OF COMMERCE  
Pat nt and Trademark OfficeAddress: ASSISTANT SECRETARY AND  
COMMISSIONER OF PATENT AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	DRAWINGS	TOT CLAIMS	IND CLAIMS
09/502,426	02/11/2000	1643	0	2225-0001	16	57	4

Robins & Associates  
90 Middlefield Road  
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DOCKETED

Date Mailed: 04/24/2000

Receipt is acknowledged of this nonprovisional Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Customer Service Center. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the PTO processes the reply to the Notice, the PTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).**

## Applicant(s)

Ricardo Azpiroz, Dallas, TX ;  
Sunghwa Choe, Tucson, AZ ;  
Kenneth A. Feldmann, Newbury, CA ;

## Continuing Data as Claimed by Applicant

THIS APPLN CLAIMS BENEFIT OF 60/119,657 02/11/1999  
AND CLAIMS BENEFIT OF 60/119,658 02/11/1999

## Foreign Applications

If Required, Foreign Filing License Granted 04/24/2000

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## Title

Dwf4 polynucleotides, polypeptides and uses thereof

## Preliminary Class

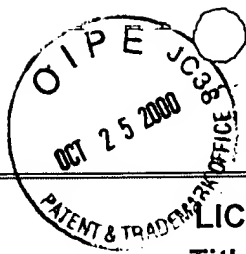
435

Data entry by : ZIMMERMAN, SHAUNA

Team : OIPE

Date: 04/24/2000





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Title 37, Code of Federal Regulations, 5.11 & 5.15**

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**PLEASE NOTE the following information about the Filing Receipt:**

- The articles such as "a," "an" and "the" are not included as the first words in the title of an application. They are considered to be unnecessary to the understanding of the title.
- The words "new," "improved," "improvements in" or "relating to" are not included as first words in the title of an application because a patent application, by nature, is a new idea or improvement.
- The title may be truncated if it consists of more than 600 characters (letters and spaces combined).
- The docket number allows a maximum of 25 characters.
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Atty Dkt No. 2225-0001  
91004.003

## APPLICATION TRANSMITTAL LETTER

Box Patent Application  
Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

EL 457530735US

- ☒ "Express Mail" Mailing Label No. EL 457 530 735 US, Date of Deposit February 11, 2000.  
I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. § 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

Patricia K. Hemeny  
(Typed or Printed Name of Person Mailing Paper or Fee)

Patricia K. Hemeny  
(Signature of Person Mailing Paper or Fee)

Transmitted herewith for filing is the patent application of Ricardo AZPIROZ, Sunghwa CHOE and Kenneth A. FELDMANN for DWF4 POLYNUCLEOTIDES, POLYPEPTIDES AND USES THEREOF claiming priority to provisional patent applications serial nos. 60/119,657 filed February 11, 1999 and 60/119,658 filed February 11, 1999.

Enclosed are:

- 16 sheets of drawings.
- \_\_\_ A claim for foreign priority under 35 U.S.C. § 119/363 in  
\_\_\_ a separate document \_\_\_ the declaration.
- X A claim for priority under 35 U.S.C. § 119(e)(1) in  
\_\_\_ a separate document X the declaration.
- \_\_\_ A certified copy of the priority document.
- \_\_\_ Verified Statement(s) Claiming Small Entity Status.
- X Other: Sequence Listing (pp.1-8); Statement to Support Filing and Submission in Accordance with 37 C.F.R. §§ 1.821-1.825; disk; return receipt postcard.

The declaration of the inventor X is enclosed X unsigned.



## DWF4 POLYNUCLEOTIDES, POLYPEPTIDES AND USES THEREOF

### 5                    CROSS-REFERENCE TO RELATED APPLICATIONS

This application is related to provisional patent applications serial nos. 60/119,657, filed February 11, 1999 and 60/119,658, filed February 11, 1999, from which priority is claimed under 35 USC §119(e)(1) and which applications are incorporated herein by reference in their entireties.

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### TECHNICAL FIELD

The present invention relates to novel polynucleotides isolated from dwarf plants. The *dwf4* polynucleotides encode all, or a portion of, a DWF4 polypeptide, a cytochrome P450 enzyme that mediates multiple steps in synthesis of  
15    brassinosteroids. The present invention also relates to isolated polynucleotides that encode regulatory regions of *dwf4*. Uses of the *dwf4* polypeptides and polynucleotides are also disclosed.

### BACKGROUND

20            Plant growth is accomplished by orderly cell division and tightly regulated cell expansion. In plants, the contribution of cell expansion to growth is of much greater significance than in most other organisms; all plant organs owe their final size to a period of significant cell elongation, which usually follows active cell division. Further, the sessile nature of plants requires that they make fine but responsive  
25    adjustments in growth to survive harsh environmental conditions and to optimize their use of limited resources (Trewavas (1986) "Resource allocation under poor growth conditions: A major role for growth substances in developmental plasticity" In Plasticity in Plants, D.H. Jennings and A.J. Trewavas, eds (Cambridge, UK: Company of Biologists Ltd.), pp. 31-76).

30            In Arabidopsis, cell elongation is largely responsible for hypocotyl growth in germinating seedlings and extension of inflorescences (bolting) at the end of vegetative growth. Coordinate control of plant growth is regulated by both external